17. The ideas of claim 1, claim 2 and claim 14 can be implemented by using proper filters (low-pass, band-pass and high-pass) to each customer sharing a line, to allow only a specific frequency band being delivered to each customer for a secure signal transmission.

18. The ideas of claim 4, 5, 9, 10, 11, 12, 14 can be used for near end crosstalk (NEXT), or far end crosstalk (FEXT) of lines, the effect of NEXT, however is normally dominant.

ABSTRACT

The present invention provides a method to reduce the crosstalk between lines assigned to a digital subscriber line (DSL) service or fat-pipe, which will then improve the signal to noise ratio (SNR) and the line reach. It can also be used to assign multiple lines to a fat-pipe, where the number of available to a fat-pipe customer is not enough for the corresponding service. The service performance can be improved through interference management by identifying those lines that are not strongly coupled, and thence assigning them to DSL service or fat-pipe, instead of using lines that are already assigned to the plain old telephone service and fat-pipe. The number of available lines for the fat-pipe customers can be increased by using lines that have already been assigned to plain old telephone service (POTS) customers, but which are not used for data transmission (DSL or fat-pipe service). When a POTS customer's line is to be used for another customer's DSL or fat-pipe service, it is required to use a low-pass filter on the POTS customer's line to prevent him/her from having access to the DSL or fat-pipe customer's data, and a high-pass filter on the DSL or fat-pipe customer's line to prevent him/her from having access to the voice signal on the line.